

What is claimed is:

1           1.       A method for processing communication at a node in a communication  
2 system comprising:  
3           receiving at said node a series of fixed-length data frames over the  
4 communication system, including receiving a plurality of data streams multiplexed in the  
5 series of fixed-length frames, each of the data streams originating from a corresponding  
6 one of a plurality of sources of data in the communication system and at least two of said  
7 data streams originate from a same source of data;  
8           for each of the series of fixed-length frames, identifying a plurality of offsets  
9 within said fixed-length frame, each of said offsets being associated with a different one  
10 of the plurality of sources of data; and  
11           processing the data streams multiplexed in the series of fixed-length frames,  
12 including, for each of the data streams, in each of the series of fixed-length frames,  
13 processing said data stream according to the offset identified for said frame that is  
14 associated with the source of said data stream.

1           2.       The method of claim 1 wherein identifying the offsets within a fixed-  
2 length frame includes accessing overhead data encoded in said frame to identify offsets  
3 that each characterizes a displacement relative to the start of the frame that is associated  
4 with a different one of the sources of data.

1           3.       The method of claim 2 wherein processing the data streams further  
2 includes extracting the one or more of the data streams from the series of fixed-length  
3 frames for transmission from the communication network.

1           4.       The method of claim 2 further comprising receiving a plurality of data  
2 streams, and multiplexing said data streams into a second series of fixed-length data  
3 frames for transmission over the communication network, wherein multiplexing said data  
4 streams includes computing an offset for each of the second series of fixed-length data  
5 frames and storing data for each of the received data streams according to the computed  
6 offset.

1           5.       The method of claim 1 wherein the communication system comprises a  
2 SONET network and receiving each of the series of fixed-length data frames includes  
3 receiving a SONET synchronous payload envelope (SPE) transported in the series of  
4 SONET transport frames.

1           6.       The method of claim 2 wherein receiving a SONET SPE includes  
2 receiving a concatenated payload envelope.

1           7.       The method of claim 2 wherein identifying the plurality of offsets for each  
2 fixed-length data frame includes using data encoded in an SPE to identify offsets which  
3 each characterizes a displacement relative to the start of the SPE that is associated with a  
4 different one of the sources of data, each source of data corresponding to a different node  
5 in the communication network.

1           8.       The method of claim 7 wherein identifying an offset which characterizes a  
2 displacement relative to the start of the SPE includes identifying SONET row offsets  
3 within the SPE.

1           9.       The method of claim 8 wherein processing the data streams includes  
2 identifying a range of SONET columns associated with each one or more of the data  
3 streams and identifying row offsets for each of said data streams according to the row  
4 offsets within the SPEs associated with the source of said data stream.

1           10.      The method of claim 9 wherein processing the data streams further  
2 includes extracting the one or more data streams from the series SPEs for transmission  
3 from the SONET network.

1           11.     The method of claim 9 wherein processing the data streams further  
2 includes multiplexing said data streams in a second series of SPEs for transmission in a  
3 second series of transport frames, and transmitting the second series of fixed-length  
4 frames over the communication system, wherein multiplexing the data streams includes  
5 storing a plurality of row offsets in each of the second series of SPEs, in each SPE each  
6 row offset corresponding to a different source node in the SONET network, and  
7 multiplexing the data streams further includes storing data for each data stream in the  
8 second series of SPEs to maintain a same relationship to the row offset correspond to the  
9 source node as that data had to the row offset corresponding to the source node in the  
10 series of SPEs received over the communication network.

1           12.     The method of claim 11 further comprising identifying a column offset  
2 associated with each source of data, and wherein multiplexing the data streams in the  
3 second series of SPEs includes determining columns in the second series of SPEs to  
4 multiplex each data stream according to the columns used by those data streams in the  
5 received series of SPEs and the column offsets.

1           13.     The method of claim 8 further comprising receiving a plurality of data  
2 streams, and multiplexing said data streams into a second series of SPEs for transport  
3 over the SONET network, wherein multiplexing said data streams includes computing a  
4 row offset for each of the second series of SPEs and storing data for each of the received  
5 data streams according to the computed row offset.

1           14.     A propagated signal embodied in a communication medium comprising a  
2 series of fixed-length data frames each of said fixed length frames including a plurality of  
3 offset values, each offset value being associated with a different one of a plurality of  
4 sources of data, and data for a plurality of data streams originating at the sources of data,  
5 wherein each offset value identifies offsets within the fixed-length frame for data streams  
6 originating at the source of data associated with said offset value.

1           15.     A communication device comprising:  
2           means for receiving at said node a series of fixed-length data frames over the  
3 communication system, including receiving a plurality of data streams multiplexed in the  
4 series of fixed-length frames, each of the data streams originating from a corresponding  
5 one of a plurality of sources of data in the communication system and at least two of said  
6 data streams corresponding to a same source of data;  
7           for each of the series of fixed-length frames, means for identifying a plurality of  
8 offsets within said fixed-length frame, each of said offsets being associated with a  
9 different one of the plurality of sources of data; and  
10          means for processing the data streams multiplexed in the series of fixed-length  
11 frames, including, for each of the data streams, in each of the series of fixed-length  
12 frames, processing said data stream according to the offset identified for said frame that  
13 is associated with the source of data corresponding to said data stream

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